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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/089,722

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Alan Taylor

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Dickstein Shapiro Morin & Oshinsky
1177 Avenue of the Americas
41 St Floor
New York, NY 10036-2714

EXAMINER

TRAN, THAO T

ART UNIT

PAPER NUMBER

1711

DATE MAILED: 01/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/089,722

Applicant(s)

TAYLOR, ALAN 

Examiner

Thao T. Tran

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 and 20 is/are pending in the application.
- 4a) Of the above claim(s) 20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions, which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

A/ Group I, claim(s) 1-18, drawn to a coating composition and a process for providing a protective coating on a substrate.

B/ Group II, claim(s) 20, drawn to a process for bonding together at least two articles using a coating composition.

2. The inventions listed as Groups I & II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: Claims 1-18 are anticipated or obvious over, e.g., US Pat. 6,306,502. As the recited features do not make a contribution over the prior art, unity of invention is lacking and restriction is appropriate.

3. During a telephone conversation with Mr. Steve Weisberg on December 31, 2003 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-18. Affirmation of this election must be made by applicant in replying to this Office action. Claim 20 has been withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Claim Objections

4. Claims 1, 4, 9, 16, and 18 are objected to because of the following informalities: It is suggested to change "obtainable", all occurrences, to --obtained--. Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

6. Claims 1-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitation "the organic monomers" in line 11. There is insufficient antecedent basis for this limitation in the claim.

Claims 5-6 are indefinite due to the use of "the ratio of the first hydrolysable monomer precursors: second hydrolysable monomer precursors". The phrase does not convey what the ratio of the monomer precursors is based on, such as weight or molarity. Clarification of the ratio is required.

Regarding claim 14, the phrase "for example" renders the claim indefinite because it is unclear whether the limitation(s) following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

7. A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim

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does not clearly set forth the metes and bounds of the patent protection desired. Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claim 3 recites the broad recitation "alkoxides", and the claim also recites "preferably alkoxysilanes" which is the narrower statement of the range/limitation.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

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9. Claims 1-4, 7-8, and 16-18 are rejected under 35 U.S.C. 102(b) as being anticipated by Groth et al. (US Pat. 5,998,504).

Groth teaches a coating on a substrate and a process of making, the process comprising applying to the substrate a coating composition; wherein the coating composition comprises a silica sol including colloidal silica, hydrolysable silanes, and alkoxysilyl-functional prepolymer (see col. 1, ln. 8-10, ln. 62 bridging col. 2, ln. 26; col. 3, ln. 15-19; col. 4, ln. 30-31).

In regards to claims 1-2, 16 and 18, Groth teaches the alkoxysilyl-functional prepolymer is first prepared (polymerization of the organic monomers) and then reacted with the silica sol containing the hydrolysable silanes in the presence of hydrochloric acid (see col. 6, ln. 41-52; col. 7, ln. 3-6, 15). Groth further teaches that to complete the reaction, the mixture may be stirred for a long time (see col. 7, ln. 16-17). Hence, the polymerization of the organic monomers is initiated prior to completion of the polymerization of the inorganic monomers.

In regards to claim 3-4 and 7-8, Groth teaches the first and second hydrolysable silanes being tetraalkoxysilane and 3-(trimethoxysilyl)propyl methacrylate (see col. 4, ln. 58-59; col. 5, ln. 7).

In regards to claim 17, although Groth does not specifically disclose that the coating is transparent, since Groth teaches the same coating composition, Groth's coating would inherently have the same properties, such as transparency, as the present invention.

10. Claims 1-4 and 16-18 are rejected under 35 U.S.C. 102(e) as being anticipated by Fukushima et al. (US Pat. 6,306,502).

Fukushima teaches a coating on a substrate and a process of making, the process comprising applying to the substrate a coating composition; wherein the coating composition

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comprises an inorganic sol A (UV curable silicone), polymerizable organic species (monomer mixture) B, and a photo-polymerization initiator C (see col. 3, ln. 10-62). Fukushima further teaches the inorganic sol A obtained by hydrolyzing particulate colloidal silica with at least one hydrolysable inorganic monomer precursor (alkoxysilane compound) (see col. 5, ln. 55 bridging col. 6, ln. 3); the organic species including poly[(meth)acryloyloxyalkyl] isocyanate and a urethane poly(meth)acrylate (see col. 3, ln. 33-53).

In regards to claims 1 and 16, Fukushima teaches the formation of the inorganic sol A is carried out in a total of 9 hours (see Synthetic Example 1) before mixing with the organic monomers B and the photo-polymerization initiator C, which appears to read on the instant claim. Since, the polymerization of the inorganic sol A occurs over months or years to complete, a reaction carried out in 9 hours would give an incomplete polymerization. Hence, the polymerization of the organic monomers would have begun before the polymerization of the inorganic monomers has completed.

In regards to claims 2-4 and 18, Fukushima teaches the inorganic sol A obtained by hydrolyzing particulate colloidal silica with at least one polymerizable alkoxysilane compound that is hydrolyzed in the presence of a mineral acid (hydrochloric acid) (see col. 4, ln. 4-7; col. 5, ln. 29-34).

In regards to claim 17, Fukushima teaches the coating is transparent (clear) (see col. 8, ln. 11-14).

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 5-6, 9, 11-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Groth as applied to claims 1 and 4 above.

Groth is as set forth in claims 1 and 4 above and incorporated herein.

Groth teaches the hydrolysable silanes present in an amount of 25-95 mole % based on the total number of moles of starting components (see col. 4, ln. 54-56). However, Groth does not teach the ratio of the first to the second hydrolysable silanes.

However, it would have been obvious to one of ordinary skill in the art, at the time the invention was made, that the amount of one silane with respect to the other silane would have been determined through routine experimentation, in order to optimize the effects that these inorganic monomers would have on the composition. This is because increasing the first silane would increase hardness and weather resistance of the cured coating; whereas increasing the second silane would increase polymerization between the inorganic sol and the organic component in the composition, and therefore, would increase adhesion of the coating to the substrate. Moreover, Applicants have not disclosed the criticality of using these specific ratios. See MPEP 2144.05, section IIA.

In regards to claim 9, Groth does not teach hydrolyzing the first and second silanes to form two separate sols and then mixing the two sols together. However, it would have been

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obvious to one of ordinary skill in the art, at the time the invention was made, that hydrolyzing the silanes separately and mixing them together would have worked equally well as hydrolyzing them together, and would have had the same effects. Moreover, Applicants have not disclosed that hydrolyzing the monomers separately and then mixing them would have more advantages over hydrolyzing them together.

In regards to claim 11, Groth teaches the organic component is added into the inorganic sol in liquid (see col. 6, ln. 63).

In regards to claims 12-15, Fukushima teaches the organic species being polyisocyanates and isocyanate-reactive chain extender; the substrate thermoplastic (see col. 7, ln. 30-36).

13. Claims 5-6, 9-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukushima as applied to claims 1, 4, and 18 above.

Fukushima is as set forth in claims 1, 4, and 18 above and incorporated herein.

In regards to claims 5-6, Fukushima does not teach a specific ratio of the first and the second silanes. However, it would have been obvious to one of ordinary skill in the art, at the time the invention was made, that the amount of one silane with respect to the other silane would have been determined through routine experimentation, in order to optimize the effects that these inorganic monomers would have on the composition. This is because increasing the first silane would increase hardness and weather resistance of the cured coating; whereas increasing the second silane would increase polymerization between the inorganic sol and the organic component in the composition, and therefore, would increase adhesion of the coating to the substrate. Moreover, Applicants have not disclosed the criticality of using these specific ratios.

See MPEP 2144.05, section IIA.

In regards to claim 9, Fukushima does not teach hydrolyzing the first and second silanes to form two separate sols and then mixing the two sols together. However, it would have been obvious to one of ordinary skill in the art, at the time the invention was made, that hydrolyzing the silanes separately and mixing them together would have worked equally well as hydrolyzing them together, and would have had the same effects. Moreover, Applicants have not disclosed that hydrolyzing the monomers separately and then mixing them would have more advantages over hydrolyzing them together.

In regards to claim 10, Fukushima teaches the sol being formed for 9 hours before mixing with the organic species (see Synthetic Example 1), which appears to read on the instant claim.

In regards to claim 11, Fukushima teaches the organic species are added into the inorganic sol in liquid (see Synthetic Example 5 and Example 1).

In regards to claims 12-15, Fukushima teaches the organic species being urethane acrylate (thermosetting) (see abstract); the substrate thermoplastic or thermosetting resins (see col. 12, ln. 50-51).

14. Claims 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukushima as applied to claims 1 and 4 above, and further in view of Vorse et al. (US Pat. 5,902,645).

Fukushima is as set forth in claims 1 and 4 above and incorporated herein.

Fukushima teaches the use of at least one silane, including 3-methacryloyloxypropyl trimethoxy silane and vinyl triethoxy silane, or the like (see col. 5, ln. 21-28). However, the reference does not teach the use of tetraethoxysilane.

Vorse teaches a coating composition including tetraethoxysilane and methacryloxypropylmethoxysilane (see col. 3, ln. 18-24). Vorse further teaches that the use of

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two silanes would increase stability of the composition and display more versatility in their usefulness (see sol. 3, ln. 7-10).

Therefore, it would have been obvious to one of ordinary skill in the art, at the time the invention was made, to have used tetraethoxysilane, as taught by Vorse, in the coating composition of Fukushima, for the purpose of enhancing stability of the composition, scratch resistance of the coating and the coating adhesion to the substrate.

Contact Information

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thao T. Tran whose telephone number is 571-272-1080. The examiner can normally be reached on Monday-Friday, from 8:30 a.m. - 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Seidleck can be reached on 571-272-1078. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Thao Tran

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December 31, 2003